

increased in area and the attending winds became somewhat less violent. No. III caused the following high velocities in the Behring's Sea region: St. Michael's, 6th, E. 52 miles; St. Paul's Island, W. 45, and Unalaska Island, terrific SW. gale. No. IV, a typhoon moving westward from the Philippine Islands to Hainan. U. S. Flagship *Monocacy*, stationed at Hong Kong, reported in connection with this storm as follows: "On the 8th, a very heavy gale was experienced in the vicinity of Hong Kong, evidently due to a moderate typhoon, the centre of which was passing in a southwesterly direction along the coast of China, leaving Hong Kong on its right; incoming vessels reported very heavy gales south of Formosa on the 7th and off Hainan on the 9th; numerous vessels dismasted and several wrecked." Much damage resulted at Hong Kong, Canton and Macao. No. V was attended by a destructive tornado in Iowa and by damaging winds in the Lake region and St. Lawrence valley during the 8th and 9th, and by heavy gales over the Atlantic, between 40° and 60° N., from the 10th to 13th. No. VII moved rapidly from the Gulf of Mexico on the 10th and was accompanied by hurricane winds from the 11th to the 14th between the American coast and the Bermudas: at Cape Lookout the anemometer measured a velocity of 72 miles per hour, from the NE., on the 11th, and on the evening of the 12th a severe thunderstorm passed over the Bermudas, during which 2.62 inches of rain fell in two hours. Off the New England and Nova Scotia coasts the storm was exceedingly severe and numerous disasters to shipping resulted. Nos. XI and XII, hurricanes over the Atlantic. No. XVIII, in its passage from Cuba to New England, is one of the severest storms on record: at Havana the wind increased to 35 miles, with violent gusts: at Key West to 46 miles; at Cape Lookout to 100 miles: at Philadelphia and Barnegat to 72 miles: on summit of Mount Washington to 120 miles, and at Portland, Me., (anemometer cup blown away,) estimated, 70 miles. An immense amount of damage to property resulted from this storm. No. XXI, with its subsidiary centres of depression, was attended by severe winds over northwestern Europe from the 22nd to the 30th. No. XXV was attended by very severe winds over Behring's Sea: St. Paul's Island, W. 60 miles, and St. Michael's, E. 37. No. XXVI was attended by very low pressures over an extensive area, reaching from Japan to Behring's Sea, during which the barometer fell to 29.62 at Tokio and 29.08 at Nikolaiivsk on the Amoor on Oct. 29th; to 28.93 at St. Paul's Island on the 31st, and to 29.08 at St. Michael's on Nov. 2nd.

TEMPERATURE OF THE AIR.

The mean temperatures for June, 1880, are shown by isotherms on Chart No. II. The table of average temperatures on that chart shows that east of the Rocky Mountains an excess of temperature generally prevailed, while to the westward deficiencies occurred. The greatest excess prevailed in the Upper Lake region (2.8 above the normal) and thence eastward to the Atlantic ocean. Deficiencies were reported from the entire Pacific slope and the Plateau districts, reaching 2.9 in the northern Pacific coast region, and 3.8 in the northern Plateau district.

Maximum and Minimum Temperatures.—Upon charting the maximum temperatures for June, 1880, great irregularities appear. In general they range from 85° to 95°. Temperatures at or above 100° have been reported from nearly every station in Arizona and the Rio Grande valley. Unusually high temperatures were reported as follows: 100° at Jacksonville, Charleston, S. C., Savannah, Wilmington, Ft. Elliott, Tex., and Ft. Keogh, Montana; 101° at Norfolk; 102° Dodge City, 103° at Umatilla—the only station on the Pacific slope exceeding 99°. The highest temperature reported was 117° at Phoenix, Arizona. The following stations reported *maxima* under 85°: Escanaba, 84°; Wood's Holl and Los Angeles, 83°; San Francisco, 82°; Milwaukee, 81°; Buffalo, 80°; Eastport, 79° and San Diego, 73°; Mt. Washington, 63; Pike's Peak, 58°. Minimum temperatures above 70° were reported from Key West (73°) and the lower Rio Grande valley. The following stations report temperatures under 37°: Apache, Ariz., and Olympia, 36°; Pembina, 35°; Pioche, 34°; Santa Fé and Deadwood, 33°; Prescott, Ariz., 32°; Campo, Cal., and Helena, Mont., 31°; Virginia City, M. T., 30°; Winnemucca, 29°; Mt. Washington, 28 and Pike's Peak, 8°. The following list shows the maximum and minimum temperatures in each State and Territory:

Maximum Temperatures.—*Maine:* 96° at *Cornish, 90° at Portland and 79° at Eastport. *New Hampshire:* 98° at *Dunbarton and *Grafton, and 63° on the summit of Mt. Washington. *Vermont:* 95° at *Charlotte, 93° at *Windsor and 89° at Burlington. *Massachusetts:* 99° at *Westborough, 94° at Springfield and 93° at Boston. *Rhode Island:* 89° at *Ft. Adams and 86° at Newport. *Connecticut:* 95° at *Mystic and 92° at New Haven. *New York:* 98° at *Schroon Lake, 95° at *Ardenia, 92° at New York City and 91° at Albany. *New Jersey:* 100° at *Atco, 99° at *Linden and 93° at Sandy Hook, Barnegat and Atlantic City. *Pennsylvania:* 97° at *Milton and Pittsburgh, 95° at *Wellsboro, and 94° at *Chambersburg and Philadelphia. *Delaware:* 92° at *Dover. *Maryland:* 95° at Baltimore. *District of Columbia:* 96.25 at Washington. *Virginia:* 101° at Norfolk. *West Virginia:* 89° at Morgantown and Helvetia. *North Carolina:* 103° at *Weldon and 100° at Wilmington. *South Carolina:* 100° at Charleston. *Georgia:* 100° at Savannah. *Florida:* 104° at *Houston and 100° at Jacksonville. *Alabama:* 98° at Montgomery. *Mississippi:* 94° at Vicksburg. *Louisiana:* 94° at *Point Pleasant and 93° at Shreveport. *Texas:* 108° at Eagle Pass, 106° at Stockton and 100° at Fort Elliott. *Ohio:* 95° at *Bellefontaine and 93° at Cincinnati. *Kentucky:* 94° at Louisville. *Tennessee:* 96° at Knoxville, Nashville and Memphis. *Arkansas:* 92° at Little Rock. *Michigan:* 94° at Marquette, 91° at Detroit. *Indiana:* 98° at *Laconia and 91° at Indianapolis. *Illinois:* 97° at Peoria and 93° at Cairo. *Missouri:* 95° at *Pierce City and 93° at St. Louis. *Kansas:* 102° at Dodge City and 90° at Leavenworth. *Wisconsin:* 94° at Edgerton and 90° at La Crosse. *Iowa:* 96° at *Glenwood and 93° at Dubuque and Des Moines. *Nebraska:* 100° at

*Genoa and 97° at Omaha. *Indian Territory*: 94° at Ft. Sill. *Minnesota*: 88° at St. Paul. *Dakota*: 95° at Deadwood and Ft. Buford. *Colorado*: 106° at *Ft. Lewis, 96° at Denver. *New Mexico*: 104° at La Mesilla. *Wyoming*: 100° at *Ft. Fetterman and 97° at Cheyenne. *Utah*: 93° at Salt Lake City. *Nevada*: 94° at Winnemucca. *Arizona*: 117° at Phoenix, 114° at Florence, and 110° at Tucson, Yuma and Burkes. *Idaho*: 91° at Boise City. *Montana*: 100° at Ft. Keogh. *California*: 99° at Visalia and Red Bluff, and 73° at San Diego. *Oregon*: 103° at Umatilla. *Washington Territory*: 90° at Olympia.

Those marked with a star (*) are reported by U. S. Army Post Surgeons or Voluntary Observers.

Minimum Temperatures.—*Maine*: 41° at *Orono and 43° at Eastport. *New Hampshire*: 28° on the summit of Mt. Washington, 38° at *Dunbarton and *Grafton. *Vermont*: 40° at *Lunenburg and 41° at Burlington. *Massachusetts*: 42° at *South Lee and 48° at Boston. *Rhode Island*: 49° at Newport. *Connecticut*: 46° at *Mystic and 47° at New Haven. *New York*: 38° at *Schroon Lake and 42° at Buffalo. *New Jersey*: 46° at *Dodge Mine. *Pennsylvania*: 37° at *Dyberry and 49° at Pittsburg. *Delaware*: 56° at *Dover. *Maryland*: 45° at *Woodstock, 52° at Baltimore. *District of Columbia*: 49° at Washington. *Virginia*: 42° at *Mt. Solon and *Wytheville, and 49° at Lynchburg. *West Virginia*: 38° at *Helvetia and 46° at Morgantown. *North Carolina*: 48° at *Franklin and 52° at Charlotte. *South Carolina*: 62° at Charleston. *Georgia*: 58° at Atlanta. *Florida*: 65° at Cedar Keys. *Alabama*: 68° at Mobile, Montgomery and *Green Spring. *Mississippi*: 63° at Vicksburg. *Louisiana*: 63° at Shreveport. *Texas*: 44° at Ft. Elliott, 53° at Stockton and 72° at Laredo. *Ohio*: 44° at *Westerville and 46° at Cleveland. *Kentucky*: 52° at Louisville. *Tennessee*: 52° at Knoxville. *Arkansas*: 50° at *Mt. Ida and 60° at Little Rock. *Michigan*: 37° at Marquette and 46° at *Lansing. *Indiana*: 50° at *New Harmony and *Lacoma, and 54° at Indianapolis. *Illinois*: 43° at *Marengo and 52° at Chicago. *Missouri*: 44° *Pierce City and 57° at St. Louis. *Kansas*: 45° at *Wellington and 57° at Dodge City. *Wisconsin*: 36° at *Ashland, 48° at La Crosse. *Iowa*: 42° at *Nora Springs, 50° at Dubuque. *Nebraska*: 42° at North Platte. *Indian Territory*: 55° at Ft. Sill and Fort Gibson. *Minnesota*: 37° at Breckenridge. *Dakota*: 33° at Deadwood, 39° at Ft. Buford. *Colorado*: 8° on summit of Pikes Peak, 19° at *Summit and 24° at *Ft. Garland. *New Mexico*: 33° at Santa Fé. *Wyoming*: 30° at *Ft. Fetterman and 37° at Cheyenne. *Utah*: 40° at Salt Lake City. *Nevada*: 29° at Winnemucca. *Arizona*: 32° at Prescott. *Idaho*: 40° at Boise City. *Montana*: 38° at Ft. Keogh. *California*: 31° at Campo, and 47° at Red Bluff and Visalia. *Oregon*: 37° at Roseburg. *Washington Territory*: 36° at Olympia.

Those marked with a star (*) are reported by U. S. Army Post Surgeons or Voluntary Observers.

Ranges of Temperatures at Signal Service Stations.—The monthly ranges will appear from the maxima and minima just given. The greatest daily ranges vary in New England from 17° on the summit of Mt. Washington, to 30° at Springfield and Boston, and 33° at Burlington; Middle Atlantic States, 20° at Cape May, to 26° at Albany and 31° at Norfolk; South Atlantic States, 14° at Cape Look-out, to 21° at Jacksonville, and 28° at Wilmington and Smithville; East Gulf States, 16° at Key West, to 24° at Mobile and Montgomery, and 26° at Pensacola; West Gulf States, 15° at Galveston, to 26° at Little Rock and 29° at Corsicana; Ohio valley and Tennessee, 21° at Cairo, to 28° at Pittsburg, and 29° at Nashville and Knoxville; Lower Lake region, 21° at Sandusky, to 29° at Rochester; Upper Lake region, 21° at Chicago, to 28° at Marquette and Alpena; Upper Mississippi valley, 21° at Davenport, to 25° at St. Louis and 30° at St. Paul; Red River of the North valley, 31° at Pembina, to 36° at Breckenridge; Missouri valley, 25° at Leavenworth, to 32° at Omaha and Bismarck, and 33° at Yankton; Texas, 27° at San Antonio and Denison to 42° at Ft. Elliott; Eastern Rocky Mountain slope, 29° at Ft. Sill, to 38° at Deadwood and 40° at North Platte; Rocky Mountains, 29° at summit of Pike's Peak, to 40° at Santa Fé and 45° at Cheyenne; Middle Plateau District, 36° at Salt Lake City, to 39° at Boise City, and 51° at Winnemucca; California, 22° at San Francisco, to 37° at Red Bluff, and 40° at Visalia.

Frost.—*Wisconsin*—Embarrass, 1st. *Dakota*—Pembina, 1st. *Nebraska*—Austin, 1st, injuring vegetation slightly; North Platte, 28th, "light hoar frost." *Pennsylvania*—Dyberry, 4th. *California*—Ft. Bidwell and Salinas City, 18th; Yreka, 19th, "seriously damaging fruit and growing crops;" Campo, 23d, 24th, heavy, 25th. *Colorado*—Pike's Peak, 22d, 25th. *New York*—Waterburg, 2nd, 3rd, 4th; Palermo, 2nd, 3rd; North Volney, 2nd, 4th; Niles, 2d. *Washington Ty.*—Olympia, 15th. *Vermont*—Woodstock, 3d, slight. *Utah*—Coalville, 11th, hoar.

Ice.—Winnemucca, Nev., 5th, 10th, 20th. Yreka, Cal., 19th, "in some localities."

PRECIPITATION.

The general distribution of the rain-fall, for June, 1880, is shown on chart No III, as accurately as possible from about 500 reports. In a table on this chart will be found the average precipitation for June, as compared with that of the present month. The rain has been unusually local in its character. The greatest deficiency (Lower Missouri valley, 3.02 inches) occurred adjacent to the greatest excess, (2.40 inches) in Minnesota. The other great departures from the normal reported, are: New England, 2.01 inches deficient; South Atlantic States, 2.78 deficient; Upper Lake region, 1.49 excess, and Western Gulf States, 1.52 excess. For the fifth successive month marked deficiencies have been reported from the greater part of the Atlantic slope. Since January 1st, 1880, the rain-fall has been deficient on that slope as follows: New England, 3.44 inches; Middle Atlantic States, 4.93 in., and South Atlantic States, 5.72 in. In connection with this deficiency serious droughts are reported in New Jersey, portions of New York and